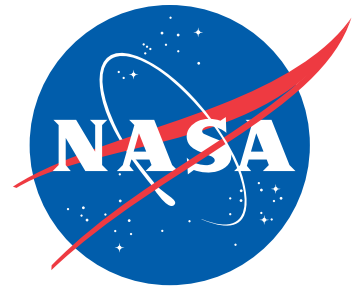


# Spaceport News

John F. Kennedy Space Center - America's gateway to the universe



## New year welcomes change, challenges

By Linda Herridge  
Spaceport News

Kennedy Space Center continues to serve as NASA's lead center for several programs and offices while transforming into a joint commercial and government launch complex.

"This is an exciting time as we continue to prepare the center for future space exploration programs," said Kennedy Center Director Bob Cabana. "We are making great progress toward a viable commercial spaceflight program and developing a heavy-lift capability that will allow us to once again send humans to explore beyond planet Earth."

NASA's Commercial Crew Program (CCP), based at Kennedy, is collaborating with the American aerospace industry as it designs and develops U.S. crew transportation capabilities to and from low-Earth orbit and the International Space Station. Throughout the year, CCP will support its three Commercial Crew Integrated Capability (CCiCap) partners, The Boeing Company, Space Exploration Technologies (SpaceX) and Sierra Nevada Corp. (SNC) Space Systems, as they work on fully integrated crew transportation systems, including launch

vehicles, spacecraft, and ground and recovery operations.

The CCP Certification Products Contract (CPC) phase began Jan. 22 and will run concurrently with CCiCap, allowing the agency's partner companies to bring their designs within NASA's safety and performance expectations for future flights to the station. Late last year, NASA awarded contracts for the first phase of certification efforts to the same three partners participating in CCiCap.

Boeing is expected to begin manufacturing its crew transportation system in one of Kennedy's former orbiter processing facilities while its subcontractor United Launch Alliance begins constructing a crew access arm and escape system at Cape Canaveral Air Force Station's (CCAFS) Atlas V launch pad. SpaceX also will continue to work on upgrading its CCAFS launch pad for crewed missions. SNC, which also will launch its spacecraft on an Atlas V from the Space Coast, plans to utilize Kennedy's Shuttle Landing Facility for future runway landings.

The Ground Processing Directorate begins the year by implementing the newly awarded Test

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CLICK ON PHOTO

NASA/Jim Grossmann

The Tracking and Data Relay Satellite, TDRS-K, is being encapsulated in the nose fairing Jan. 11 inside the Astrotech payload processing facility in Titusville, Fla. near Kennedy Space Center. Launch of the TDRS-K on the Atlas V rocket is planned for Jan. 30.

## Fairing cradles TDRS for first liftoff of 2013

By Steven Siceloff  
Spaceport News

NASA's Tracking and Data Relay Satellite System will get an upgrade this month when the agency launches the first of a new generation of communications satellites to connect spacecraft to the ground stations that support them.

A United Launch Alliance Atlas V 401 is due to loft the TDRS-K spacecraft Jan. 30 on a course to geosynchronous orbit where the spacecraft will have a wide view of Earth. From

that position, the spacecraft will pick up signals from NASA's fleet of Earth-orbiting science spacecraft, including the International Space Station and NASA's Hubble Space Telescope, and relay them to ground stations.

The advanced spacecraft, also known as TDRSS for the whole system or TDRS for an individual spacecraft and its greater capacity, is needed to keep the communications network on pace as NASA's

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CPC landmark



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Kennedy's new  
internal homepage,

The Kennedy  
Communicator

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fleet of research satellites has increased.

"It has some higher bandwidth capabilities," said Diana Calero, mission manager for NASA's Launch Services Program, or LSP, based at Kennedy Space Center in Florida. "We have some aging satellites, so we need new spacecraft to go in there and help carry more of the data."

The processing for this mission included the standard in-depth reviews but also took into account extra engineering sessions to investigate whether the underperformance of an upper stage engine during an earlier, non-NASA launch would occur during the TDRS-ascent, said Tim Dunn, NASA launch director. The Centaur upper stage used by the Atlas V uses an engine similar to the one that underperformed during a Delta IV launch last year.

"Our engineers and analysts from the Launch Services Program, working alongside the United Launch Alliance engineers, have been methodically reviewing data and working on flight clearance rationale for the TDRS-K mission. Flight clearance for TDRS-K from the Delta IV RL-10 underperformance has been our biggest launch campaign challenge to date," Dunn said.

The new TDRS took on the look of a fly as it stood with its large steerable antennas folded over top of each other inside a processing hangar at Astrotech in Titusville. The spacecraft, built by The Boeing Company in El Segundo, Calif., arrived in Florida just before the holiday season. Following testing and launch preparations, it was packed inside a two-part payload fairing and taken to Space Launch Complex 41 at Cape Canaveral Air Force Station.



NASA/Frankie Martin

NASA's Tracking and Data Relay Satellite (TDRS-K) stands positioned Jan. 16 between two pieces that make up the payload fairing that will protect the spacecraft during launch and ascent into space. Technicians working inside the Astrotech payload processing facility in Titusville, Fla., near Kennedy Space Center performed the encapsulation. Launch of the TDRS-K on the United Launch Alliance Atlas V rocket is planned for Jan. 30.

It will take about half an hour for the spacecraft to unfold its two circular antennas and a pair of large solar arrays as it climbs to its destination. Onboard thrusters will provide the final guidance for the spacecraft as it settles into its operational location.

"The antennas are furled and they have a certain amount of days that they can stay furled," Calero said. "If they pass that, then the antennas, when they're deployed, they can actually degrade in space and so we have to play close attention to how long they stay furled. So it was really challenging trying to schedule the shipping of the spacecraft with the moving launch date. We're still watching it very closely."

TDRS-K will be the 11th TDRS launched by NASA

since it began building the space-borne network in 1983. The most recent spacecraft launched in 2002.

"We haven't launched a TDRS in about 10 years so this launch is really important," Calero said.

The new TDRS will be able to transmit several times more information than its predecessors.

"In terms of bandwidth capability, it's probably four or five times higher bandwidth improvement," said Paul Buchanan, deputy project manager for TDRS.

Orbiting about 22,300 miles above Earth, positioned roughly over Hawaii, TDRS-K will put a myriad of antennas to work to receive and transmit signals from a wide range of spacecraft to Earth and vice-versa.

The satellites are not much different from those used by

companies such as DirecTV, Buchanan said.

"Ours is more science and data and voice versus radio and television, but it's essentially the same type of technology," Buchanan said. "It's just implemented differently."

Even rockets carrying NASA spacecraft have TDRS-compatible communications gear and transmit telemetry through the orbiting network instead of ground stations, an advancement that saves NASA money by not having to field specialized aircraft and ships or open a string of remote stations to monitor a launch.

The number of satellites required to serve NASA's orbiting fleet of scientific spacecraft has grown to such an extent that the TDRS network already operating in orbit, plus the TDRS-K and

two identical TDRS spacecraft launching next year and in 2015, will have plenty of commands, telemetry and data to relay.

"All the Hubble pictures come through TDRS, all the video that we see from the space station and the astronauts and the video we saw from the shuttle, it all comes through TDRS, and then we have all the Earth-orbiting satellites, all that data comes through TDRS," Buchanan said.

The communications constellation replaced the ground stations positioned on Earth so NASA could communicate with astronauts in orbit. That system allowed contact only when the spacecraft passed within range of the antennas, however. With TDRS satellites in place, controllers have near-constant contact with spacecraft.

Six TDRS spacecraft are operational in orbit, one new satellite is in orbital storage ready to take the place of an older TDRS and two older models have been retired. The oldest one still working is TDRS-3, launched in September 1988 aboard space shuttle Discovery.

"We've had to decommission two legacy spacecraft in the last year or two due to the fact that electronics start to die after 20, 25 years," Buchanan said. "We're launching now for an immediate need and replenishment schedule. I think it's a fine balance between the existing system and replenishment."

When their service life is up, the TDRS satellites are moved farther from Earth into what's called a storage orbit about 250 miles higher. Geosynchronous orbit is considered prime real estate for communications satellites, including those carrying television and radio signals, but the storage orbit area offers plenty of room for a retired spacecraft to drift about safely.



## From 2013, Page 1

and Operations Support Contract (TOSC). NASA will work with the new contractor, Jacobs Technology Inc. to achieve overall management and implementation of ground systems capabilities, flight hardware processing and launch operations, as it transitions from the previous Checkout, Assembly and Payload Processing Services and Space Program Operations contracts. Ground Processing will provide day-to-day operations management and logistics support for launch complex and spacecraft/payload processing assets in support of program customers and implement a launch complex operations approach that supports users from NASA, commercial industry and other government agencies.

In support of NASA's core programs, Ground Processing will host the Launch Services Program for the upcoming Mars Atmosphere and Volatile Evolution (MAVEN) mission in November. The directorate also will work to prepare, test, and provide on-time delivery of space flight hardware to U.S. and international launch service providers for delivery to the International Space Station. It also will provide technical products and services to the Ground Systems Development and Operations (GSDO) Program to help develop Kennedy's launch complex infrastructure.

In 2013, GSDO will continue to prepare the Vehicle Assembly

Building to support a variety of launch vehicle and spacecraft processing scenarios, including NASA's Space Launch System and Orion spacecraft. GSDO will upgrade the 175-ton crane, complete the High Bay 3 platform design and award the Firex pumping and piping systems upgrade project.

GSDO also will develop a new command and control system for Firing Room 1, also known as the Young-Crippen Firing Room, in the Launch Control Center and continue a concept development study for an emergency egress system for Launch Pad 39B.

Assembly, integration and checkout will be completed on NASA's Orion crew module for Exploration Flight Test 1 (EFT-1) in the Operations and Checkout Building high bay. Once completed, the spacecraft will be transported to Astrotech in Titusville for fuel servicing. EFT-1 will be launched on a United Launch Alliance Delta IV rocket in 2014. At the end of the test flight, GSDO will recover the module after it splashes down in the Pacific Ocean.

LSP is busy preparing for the agency's next launch, Tracking and Data Relay Satellite-K (TDRS-K), aboard a United Launch Alliance Atlas V rocket from Launch Complex 41, Jan. 30.

TDRS-K is the first of three next-generation satellites that have improved solar panels that will provide more power to the spacecraft, expand the lifespan of the fleet and

allow the TDRS system to service more customers with different and evolving communication requirements.

Two weeks later, LSP will support the launch of NASA's Landsat Data Continuity Mission (LDCM) spacecraft aboard a ULA Atlas V rocket from Space Launch Complex-3 at Vandenberg Air Force Base in California.

LDCM is a NASA and U.S. Geological Survey mission that will continue a 40-year record of measuring change on the planet from space. The spacecraft was built and tested by Orbital Sciences Corp.

NASA's next launch, aboard an Orbital Sciences Pegasus XL rocket, will be in late April when the agency's Interface Region Imaging Spectrograph spacecraft launches from Vandenberg.

Throughout the year, LSP will continue to support advance planning for about 20 missions that are in the early stages of formulation and provide integration services for 12 missions already under contract, including those scheduled for 2013. The program also will continue in an advisory role for Commercial Resupply missions based at Johnson Space Center, and collaborate with CCP.

The International Space Station Ground Processing and Research Project Office will focus on developing science experiments, testing a new Nitrogen Oxygen Recharge System (NORS) and processing orbital replacement units.

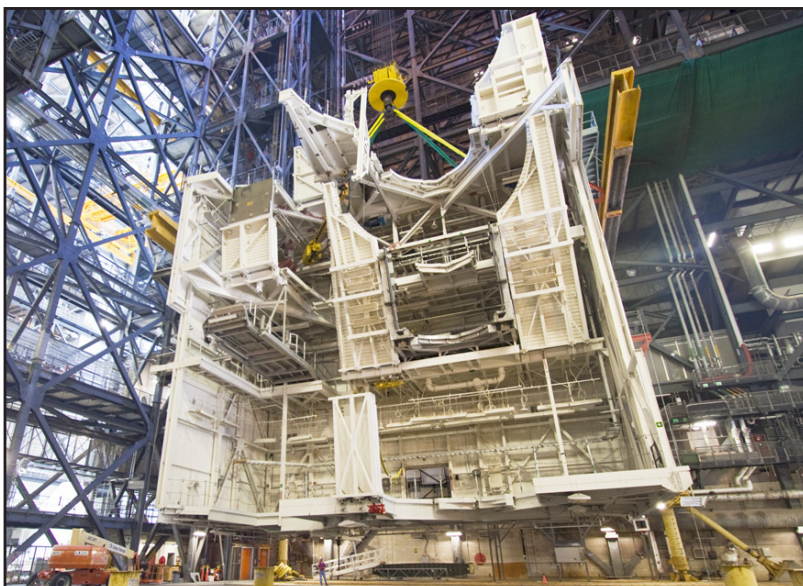
This year, the office will work to develop a variety of science experiments for future delivery to the station, including the Biologic Research in Canisters (BRIC) series of experiments, BRIC-17, the Biotope, BRIC-18 and the Advanced Plant Experiment (APEX) flying on future commercial resupply missions.

Inside the Space Station Processing Facility, several orbital replacement units for the station are being processed and prepared for shipment to Tanegashima, Japan, in February in support of the HTV-4 cargo resupply flight to the orbiting laboratory.

During the year, testing will commence on NORS, which is a composite over-pressurized vessel used for recharging space station airlock tanks for use in preparation for Extra Vehicular Activities (EVAs).

The office will provide support for the Advanced Plant Habitat and the testing and integration of other station payloads, including the Stratospheric Aerosol and Gas Experiment-III sponsored by Langley Research Center in Hampton, Va., and the Optical Payload for Laser-comm Science (OPALS) sponsored by the Jet Propulsion Laboratory (JPL) in Pasadena, Calif.

OPALS will demonstrate optical communication by transferring a video from the payload on the station to a ground receiver at JPL's Optical Communications Telescope Laboratory in Wrightwood, Calif.



NASA/Jim Grossmann

As part of Ground Systems Development and Operations Program work at Kennedy Space Center, space shuttle-era work platforms are removed from high bay 3 in the Vehicle Assembly Building on Oct. 24. All platforms were removed two days later.



NASA/Charisse Nahser

Workers inside the Space Station Processing Facility at Kennedy Space Center position the orbital replacement unit for the space station's main bus switching unit as they prepare to pack the unit in a shipping container Dec. 4. The unit, which was processed at Kennedy, will be shipped to Japan for the HTV-4 launch, which currently is scheduled later this month.



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Announcing Kennedy's new internal home page  
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Send an e-mail to Public Affairs if you have any questions.

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Track local weather and Kennedy Weather Warnings aired across the PA system.

In an effort to provide employees with up-to-date center news, program highlights, publications and resources, we've revamped your internal home page. The Kennedy Communicator, a collaborative effort by multiple directorates, is a one-stop-shop center communications tool. Remember, The Kennedy Communicator was designed with you in mind. Send questions to Public Affairs by clicking "Feedback."

The screenshot shows the homepage of 'The Kennedy Communicator'. At the top, there's a navigation bar with links: Home, Employee Resources, Launch Schedule, External Home Page, Need Help?, and Search. Below this is a welcome message: 'Welcome to the new Kennedy Communicator! This one-stop-shop...'. The main content area is divided into several sections:

- Publications:** A sidebar menu with links to People, Jobs, Training, NASA Centers, Directorates, Contractors, Partners, Volunteer Opportunities, Feedback, and KSC Portal.
- Commercial Crew Program:** A featured section with a video player, a 'Check Out CCP's Twitter Site for Responses to Your Questions' link, and a 'TOOLBOX' containing links to Website, Feature Stories, News Releases, Bookmark, CCI Cap Poster, Image Gallery, Videos, Biographies, Program Poster, and Fact Sheet.
- From Our Leaders:** A section with a photo of a leader and text about the challenges of the program.
- Upcoming Events:** A section with 'THIS WEEK' and 'NEXT WEEK' event listings, and a 'LOOKING AHEAD' section for Jan. 29 TDRS-K Launch, Feb. 1 AMF Memorial Ceremony, and Feb. 1 Safety and Health Days.
- Weather:** A section with a map of Florida and a 'Click animation for more information' link.
- KSC Weather Warnings:** A section with a photo of the Kennedy Space Center and a list of 15 warnings.
- Social Media Updates:** A section with links to Facebook, Twitter, and YouTube, and a 'NASA's Kennedy Space Center Saturday's rollout from Astrotech of NASA's TDRS-K Tracking and Data Relay Satellite to Launch Complex 41 has been postponed 24 hours because of high winds at the launch site. The forecast calls for improving wind conditions Sunday that would allow workers to hoist the satellite and payload fairing into place atop the Atlas V rocket. This delay will not impact the Jan. 29 launch date for the TDRS-K mission.' link.
- KSC Daily News:** A section with a list of 15 news items for Friday, Jan. 25, 2013.
- Video of the Day:** A section with a video player and a 'Next-Generation Space Ambitions Keep Rolling' link.
- Featured Videos:** A section with links to Hatch Act, Center Director All Hands July 13, 2012, 2012 KSC Hurricane Briefing, Women at KSC, March 16, 2012, and Online Shopping Cyber Safety Tips.
- Photo of the Day:** A section with a photo of the TDRS-K and a 'To learn more about "Photo of the Day"' link.

At the bottom, there's a footer with contact information for the Information Technology & Communications Services Directorate, Michael J. Bolger, Director, and the Internal Communications Public Affairs Office, Stephanie Covey, Acting Web Manager, Laurie Brown, Last Updated: Friday, January 18, 2013.

## Emergency Response

Dial 867-7911 or click the appropriate link at the top of your home page.

## From Our Leaders

Gain insight into what's going on behind the scenes from our leaders.

## Breaking News

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\*The Kennedy Communicator is only available to Kennedy employees with internal access.



# Scenes Around Kennedy Space Center



**CLICK ON PHOTO**  
A new 12-inch water main is being installed as part of a water/wastewater revitalizing plan at Kennedy Space Center on Jan. 11. The main will provide water to the area around the Shuttle Landing Facility's Landing Aids Control Building and fire station. The Shuttle Landing Facility is a single, 15,000-foot-long concrete runway oriented to the southeast and northwest. Air traffic control is provided from a control tower built to FAA standards. Fire and emergency response services also are available from an on-site facility.

NASA/Tim Jacobs



New towers are constructed Jan. 10 for the Antenna Test Bed Array for the Ka-Band Objects Observation and Monitoring (Ka-BOOM) system. The antennas will be part of the operations command center facility. The construction site is near the former Vertical Processing Facility location. The Ka-BOOM project is one of the final steps in developing the techniques to build a high-power, high-resolution radar system capable of becoming a Near-Earth Object Early Warning System. While also capable of space communication and radio science experiments, developing radar applications is the primary focus of the arrays.

NASA/Ben Smegelsky



**CLICK ON PHOTO**  
The Space Exploration Technologies (SpaceX) Dragon spacecraft with solar array fairings attached, stands inside a processing hangar at Cape Canaveral Air Force Station on Jan. 15. The spacecraft will launch on the upcoming SpaceX CRS-2 mission currently scheduled for March 1. The flight will be the second commercial resupply mission to the International Space Station by SpaceX. NASA has contracted for a total of 12 commercial resupply flights from SpaceX and eight from the Orbital Sciences Corp.

NASA/Tim Jacobs



**CLICK ON PHOTO**  
An alligator lurks in the marsh on Blackpoint Wildlife Drive in the Merritt Island National Wildlife Refuge, northwest of Kennedy Space Center on Dec. 19. Merritt Island National Wildlife Refuge overlaps with Kennedy. The refuge encompasses 92,000 acres that are a habitat for more than 331 species of birds, 31 mammals, 117 fishes, and 65 amphibians and reptiles. The marshes and open water of the refuge provide wintering areas for 23 species of migratory waterfowl, as well as a year-round home for great blue herons, great egrets, wood storks, cormorants, brown pelicans and other species of marsh and shore birds, and a variety of insects.

NASA/Jim Grossmann



**CLICK ON PHOTO**  
Technicians inspect the Landsat Data Continuity Mission (LDCM) spacecraft in the Astrotech processing facility at Vandenberg Air Force Base in California, following fueling operations on Jan. 12. LDCM is the future of Landsat satellites. It will continue to obtain valuable data and imagery to be used in agriculture, education, business, science and government. The Landsat Program provides repetitive acquisition of high-resolution multispectral data of the Earth's surface on a global basis. The data from the Landsat spacecraft constitute the longest record of the Earth's continental surfaces as seen from space. It is a record unmatched in quality, detail, coverage and value. Launch is planned for Feb. 11.

Photo courtesy of Vandenberg Air Force Base







CLICK ON PHOTO

NASA/Dimitri Gerondidakis

Jacobs Technology General Manager Andy Allen speaks at a town hall meeting, providing attendees an opportunity to learn about the Test and Operations Support Contract (TOSC) hiring process and to introduce the organization's management team Jan. 17. NASA recently awarded its TOSC contract to Jacobs Technology Inc. of Tullahoma, Tenn. Jacobs will provide overall management and

implementation of ground systems capabilities, flight hardware processing and launch operations at Kennedy. These tasks will support the International Space Station, Ground Systems Development and Operations, Space Launch System, Orion Multi-Purpose Crew Vehicle and Launch Services programs. For more information, click on the photo.

# Kennedy hosts TOSC town hall meetings

By Bob Granath  
Spaceport News

With the start of the Test and Operations Support Contract (TOSC), Jacobs Technology Inc. will be bringing more jobs to Florida's Space Coast as Kennedy Space Center is positioning itself for the next era of space exploration. The Jacobs leadership team hosted four town hall meetings the week of Jan. 14 to give employees at Kennedy an opportunity to learn more.

Working with the Jacobs team are subcontractors Engineering Research and

Consulting Inc. (ERC) of Huntsville, Ala., and Aerodyne Industries LLC of Oldsmar, Fla.

Jacobs already supports NASA through several long-term engineering, scientific, operations and maintenance, and technical contracts at 10 NASA centers and sites.

The Jacobs team is led by Andy Allen, TOSC's general manager. During the town hall meetings, he emphasized that safety will be an important part of the organization's culture.

"Kennedy has an excellent safety program," said Allen, a former NASA astronaut and veteran

aerospace executive. "The culture here lives, breathes and walks the talk of safety. Jacobs' approach will be to add value to that process."

NASA awarded its TOSC to Jacobs of Tullahoma, Tenn., for overall management and implementation of ground systems capabilities, flight hardware processing and launch operations at Kennedy. This work will support the International Space Station, Ground Systems Development and Operations, the Space Launch System, Orion Multi-Purpose Crew Vehicle and Launch Services programs.

TOSC begins March 1, following a two-month phase-in period that started Jan. 2. Allen noted that the management team will be busy between now and the contract start date.

"Right now, we're not sure what the exact number will be," he said, "but we will be hiring something like 500 plus. We are also planning on some future growth."

The contract is another step forward as Kennedy transitions to a 21st-century launch facility with multiple users, both private and government. The infrastructure taking shape is designed to host many kinds of space-

craft and rockets, sending people on America's future voyages in space.

Jacobs' managers stressed that TOSC is part of a new era in spaceflight.

"This is not a successor contract," said Lee Whitham, vice president and director of Human Resources for Jacobs. "TOSC is a brand new contract for a new day."

## More online

For more information about Jacobs Technology's Operations Support Contract (TOSC), go to <http://www.jacobstechnology.com/tosc/townhall.html>.



# NASA transforms tribal school to 4-year university

By Bob Granath  
Spaceport News

Navajo Technical College in Crownpoint, N.M., recently transitioned from a two-year college to a four-year university thanks to funding from NASA's Minority University Research and Education Program (MUREP) Small Projects (MSP). In partnerships with the agency, students from Navajo Tech worked with two NASA centers in recent years, supporting projects related to future space exploration.

MUREP is an effort of the agency's Office of Education to engage underrepresented populations through a wide variety of initiatives. Multiyear grants are awarded to assist minority institution faculty and students in research or curriculum content related to NASA's missions, as well as internships and scholarships. Managed for NASA at Kennedy Space Center, MSP focuses on recruitment and retention of underrepresented and underserved students in science, technology, engineering and mathematics (STEM) disciplines through completion of undergraduate or graduate degrees in support of their entry into the scientific and technical workforce.

"Navajo Tech has helped NASA with projects such as laser scanning for critical flight support buildings for Marshall (Space Flight Center)," said Theresa Martinez, MSP project manager in Kennedy's Education Programs and University Research Office. "Now we have an opportunity to help them."

Navajo Tech students and faculty worked with two NASA centers during the summers of 2010 and 2011 using laser-scanning techniques to determine whether there was enough clearance to move a piece of developmental rocket hardware from one building to another at Marshall in Huntsville, Ala. The techniques allowed the team to make reliable, precise measurements of the buildings.

Navajo Tech was chartered in 1979 by the Navajo Nation with a mission to offer technical, vocational and academic degrees and community education in a student-oriented, hands-on learning environment.



Navajo Technical College engineering students Candice Craig, left, and Oga John use a laser scanner for measurements at NASA's Marshall Space Flight Center in 2011. Both women are interested in digital manufacturing and plan to complete degrees in engineering.

NASA

"Building on NASA's previous MUREP Small Projects seed funding, Navajo Tech has incorporated laser scanning and rapid prototyping technology skills into courses at the college," Martinez said. "This grant has created a greater impact for the college than any of us ever expected."

These critical skills, needed by NASA, also bring work directly into the Navajo community. The new courses have developed into a four-year degree in technology with a concentration in digital manufacturing. Additionally, the college now offers four-year bachelor's degrees in industrial engineering, information technology, environmental science and natural resources, and the Dine' (Navajo) language, culture and leadership.

"These laser-scanning techniques and critical skills developed in the NASA-Navajo Tech partnership are now resulting in businesses requesting support from the school in New Mexico," she said. "Corporations are hoping to utilize this new technology in their industry which brings work directly into the Navajo com-

munity and economic growth in the area around the school. This should result in job opportunities for the first new four-year Navajo Tech students expected to graduate in 2014."

More career options for Navajo Tech students also have resulted in a boost to recruitment. MSP funded student internships during the past three years have been a critical component for retention of Navajo Tech students.

"The past few years, enrollment at Navajo Tech has gone from 300 students to over 1,800," Martinez said. "Transition from a two-year college to a four-year university has been very exciting to watch, knowing that NASA was the catalyst for the change."

NASA MSP efforts have been active in other areas. The agency's Minority Innovation Challenges Institute (MICI) has helped train and mentor minority undergraduate students through an MSP grant provided to Florida A&M University.

"MICI is a year-round virtual conference platform where minority undergraduate students learn how to compete in NASA technical chal-

lenges for both prestige and significant cash prizes," Martinez said.

The competitions provide prizes ranging from \$5,000 to \$2 million. Participation is open to any undergraduate student located within the United States who is majoring in a field of study relating to science, technology, engineering and mathematics. In addition, university faculty members are welcome to attend these sessions so they can take this information back to their classrooms.

"The Minority University Research and Education Program has been a two-way effort," Martinez said. "While we're glad to assist college students in advancing their studies, they have provided many new ideas that are helping us at the same time."

## More online

For more information about NASA's Minority University Research and Education Programs Small Projects, go to <http://www.nasa.gov/education/msp>.







# CASIS selects former NASA chief scientist as chair

By Bob Granath  
Spaceport News

The board of directors for the Center for the Advancement of Science in Space (CASIS) recently announced the selection of France Córdova, as the group's chairwoman. She is president emerita of Purdue University, where she is a professor in the Department of Physics and Astronomy. CASIS is the nonprofit organization promoting and managing research aboard the International Space Station (ISS).

Córdova was the youngest person and first woman to hold the position of NASA chief scientist, serving in that role from 1993 to 1996. She was the primary scientific advisor to the agency's administrator and the principal interface between NASA Headquarters and the broader scientific community.



NASA

The Center for the Advancement of Science in Space (CASIS) named France Córdova as the group's chairwoman Dec. 13.

"I am honored to have been selected as chair of the CASIS board of directors, and I am eager to work with such accomplished and experienced individuals," said Córdova.

"We all affirm the importance of the CASIS mission -- to maximize utilization of the ISS -- and plan to put our networks and abilities to bear to lead this organization."

Following her selection as chairwoman Dec. 13, 2012, Córdova is the CASIS board spokeswoman and will preside over board meetings.

Córdova attended Stanford University, graduating with a bachelor's degree in English. She went on to earn a doctorate in physics from the California Institute of Technology in 1979. Her scientific contributions have been in the areas of observational and experimental astrophysics, multi-spectral research on X-ray and gamma ray sources and space-borne instrumentation.

In 2005, Congress designated the U.S. portion of the space station as the nation's newest national labora-

tory. This is designed to maximize its use as a unique research environment for other government agencies, as well as academic and private institutions, and for advancing science, technology, engineering and mathematics (STEM) education.

Five years later, Congress authorized NASA to competitively select a nonprofit organization to manage the station's U.S. National Laboratory. Early in 2011, NASA released a co-operative agreement notice to solicit proposals, and CASIS was selected on July 13, 2011.

Located in Exploration Park at Kennedy Space Center, CASIS facilitates commercial research initiatives aboard the International Space Station's National Laboratory. In this role, CASIS provides opportunities for research and technology development aboard America's only in-orbit science facility.

## FY 2013 First Quarter Length of Service Awardees

Joseph Lackovich Jr.	45	VA	Russo Robert	25	SA	Thomas Hogrefe	5	GP
Lilly Larry	45	retired	Karen Lucht	20	FA	David Schultz	5	GP
Clinton Bartley	40	IT	Becky Murray	20	FA	Tina Crass	5	GP
Donald McMahon	40	SA	David Stewart	20	NE	Liliana Villarreal	5	GP
Ronald Gillett	40	SA	Tyrone Frey	20	OP	George Horanic	5	GP
Welmon Speed Jr.	35	GP	Candrea Thomas	20	PA	Kevin Panik	5	GP
Richard Schneider	35	TA	Terrence O'Shea	20	SA	John Jones	5	GP
Ira Kight III	35	UB	Diane Bent	20	TA	Rommel Rubio	5	LX
Tyrell Hawkins	30	FA	Robert Henry	15	LX	Michael Lee	5	LX
Kathy Bryant	30	GG	Adam Dokos	15	NE	Jerad Merbitz	5	LX
Michael Conroy	30	IT	Allan Jones Jr.	15	OP	Phillip Youmans	5	NE
Philip Gvozdz	30	IT	James Herndon	15	SA	Joseph Bartyzel	5	NE
Matthew Smisor	30	IT	Nathan Wood	15	VA	Timothy Jace	5	NE
Alton Mangham	30	NE	Jeppie Compton	10	EX	Lien Moore	5	NE
Tommy Mack Jr.	30	NE	Michun North	10	GG	Alan Leite	5	NE
Melanie Chan	30	TA	Nicholas Reinert	10	GG	Michael Dupuis	5	NE
Kelly Gorman	30	TA	Ann Robertson	10	GG	Justin Oliveira	5	NE
Richard Boyles	30	TA	Fayann Hull	10	GP	Behrouz Pashae	5	NE
Charles Dovale	30	VA	Michael Stirling	10	NE	Anthony Muscatello	5	NE
Langevin Roger	30	TA	Carter Euziere	10	OP	Dallas McCarter	5	SA
Joyce Riquelme	25	AA	Jennifer Nufer	10	PH	Alan Alemany	5	SA
Eric Barcon	25	GP	Charles Broughton	10	SA	Michael Le	5	TA
Francis Smith	25	GP	Jeffery Bobersky	10	SA	David Sumner	5	TA
Gregory Estes	25	IT	Randall Scott	10	TA	Ray Davis	5	TA
Quang Tran	25	IT	Paul Schallhorn	10	VA	Michael Collins	5	TA
Dean Orr	25	NE	Melanie Huss	5	BA	John Bahmardi	5	VA
Brian Luther	25	NE	Timothy Ferris	5	BA	Britney Burch	5	VA
Donald Metzger Jr.	25	SA	Melissa Jones	5	FA			
Smith Charles	25	GG	Creg Raffington	5	GG			



# NASA Spinoffs: Super Bowl Edition

A modified form of woven-fiber fabric used as cushioning in space boots now is used in an advanced athletic shoe. Not only does this fatigue-reducing shoe actually absorb energy, but it also redistributes that energy back into the athlete with every step, measurably increasing overall athletic efficiency.



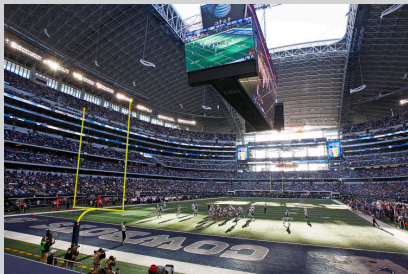
By developing the right combination of phosphate and glass, NASA quickly provided a solution for adequate transparency in the small, gas-filled glass spheres needed to build the new larger and curved format displays.

NASA invented video stabilization software so it could analyze space shuttle launches. That technology is used in overhead cameras that ride on wires to provide bird's-eye views of each play.



NASA invented wireless headsets for the missions to the moon. Of course, now the equipment is lighter and the signals are clearer. This same technology also has made its way into radio dispatch centers at police, fire, taxi cab, waste management, utility company facilities and video games.

Some stadiums, such as Cowboys Stadium, have roofs built with the same fabric used in moon suits worn by Apollo astronauts. The Teflon fiberglass fabric is lightweight, flexible, and waterproof. The material can expand with heat, contract with cold, won't catch fire, and allows sunlight to shine through.



NASA pioneered the concept of digitally based, direct-broadcast satellites that provide direct services. NASA also is responsible for the technology that improves mobile reception of television via satellite on moving vehicles, such as buses and trains.

To find a trace of outer space in your home and city or to learn more about NASA Spinoffs, click the NASA City icon at right.



# Looking up and ahead . . .

*\* All times are Eastern*

**Jan. 30**

**Mission:** Tracking and Data Relay Satellite-K (TDRS-K)

**Launch Vehicle:** Atlas V

**Launch Site:** Cape Canaveral Air Force Station

**Launch Pad:** Space Launch Complex 41

**Launch Window:** 8:48 to 9:28 p.m.

**Description:** The TDRS-K spacecraft is part of the next-generation series in the Tracking and Data Relay Satellite System, a constellation of space-based communication satellites providing tracking, telemetry, command and high-bandwidth data return services.

**Feb. 11**

**Mission:** The Landsat Data Continuity Mission (LDCM)

**Launch Vehicle:** Atlas V-401

**Launch Site:** Vandenberg Air Force Base, Calif.

**Launch Window:** 1:02 to 1:50 p.m.

**Description:** The Landsat Data Continuity Mission (LDCM) is the future of Landsat satellites. It will continue to obtain valuable data and imagery to be used in agriculture, education, business, science and government.

**Feb. 12**

**Launch Vehicle:** ISS Progress 50

**Launch Site:** Baikonur Cosmodrome, Kazakhstan

**Description:** Progress 50 will carry supplies, hardware, fuel and water to the International Space Station (ISS).

**March 1**

**Mission:** SpaceX CRS-2 Commercial Resupply Services flight

**Launch Vehicle:** Falcon 9

**Launch Site:** Cape Canaveral Air Force Station

**Launch Pad:** Space Launch Complex 40

**Description:** SpaceX CRS-2 will be the second commercial resupply mission to the International Space Station by SpaceX.

**March 28**

**Assembly Flight:** 34S

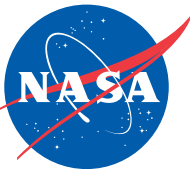
**Mission:** Expedition 35/36

**Launch Vehicle:** Soyuz TMA-08M

**Launch Site:** Baikonur Cosmodrome, Kazakhstan

**Description:** Soyuz TMA-08M will carry three Expedition 35/36 crew members to the International Space Station.

To watch a NASA launch online, go to <http://www.nasa.gov/ntv>.



John F. Kennedy Space Center

# Spaceport News

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